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The accompanying motions of attention are not merely signs of the former, but are essential, constituent factors of it. Suppress the expressive movements, and you suppress the whole process. The fundamental rôle of these movements is to keep up and reinforce the attentive consciousness. The brain in attention acts both as an intellectual and as a motor organ.

A special form of spontaneous attention is surprise, and it is simply an exaggerated form of it. Descartes has given a good account of it, recognizing (though in other terms) the increase of nervous influxes that accompany it, the direction of energy towards muscles, and the typical facial expression. Surprise is a shock caused by the unexpected, a sort of emotional hiatus. This lasts until the object that caused the surprise is apperceived, recognized, adapted to. In surprise one feels much, and knows little; and the intense emotion rivets the attention. On the physical side the symptoms are exaggerated, the eyelids are widely opened,¹ perhaps the mouth too.

The utility of attention in the struggle for life is evident. The moment differentiation is clear, one part of the organism concentrates the energy and arouses a rudimentary attention. Riccardi places the origin of attention in the arthropods. The attention gets centred upon the most perfect sense in the animal, whichever that is. In the higher animals attention is marked, and in all such as play, showing thereby a surplus of energy, there is also an attention to objects not directly useful in the struggle for existence. This is the higher form of attention, equally evident in children.

In a succeeding article. Professor Ribot will give a similar exposition of voluntary attention.

PRIMITIVE MIND. — An interesting glimpse into the thought processes of unenlightened peoples is furnished by the following observation of the Ainos (a degenerate Japanese tribe distinguished for their long growth of hair) during the recent eclipse. The Aino is said not to be imaginative, but, on being shown the eclipse through a smoked glass, he cried out that the sun was fainting away and dying. A silence ensued, broken by an exclamation of fear that the sun would dry up. They brought water and sprinkled it upwards towards the sun, crying, "O god, we revive thee! O god, we revive thee!" Some squirted the water upwards with their mouths, some threw it up with their hands. A group of women and girls sat down with their heads between their knees, as if expecting some calamity. Their tradition with regard to the eclipse says that "when my father was a child, he heard his old grandfather say that his grandfather saw a total eclipse of the sun. The earth became quite dark, and shadows could not be seen; the birds went to roost, and the dogs began to howl. The black, dead sun shot out tongues of fire and lightning from its sides, and the stars shone brightly. Then the sun began to return to life, and the faces of the people wore an aspect of death; and, as the sun gradually came to life, these men began to live again." Otherwise they have no theory of the eclipse, but their personification of the phenomenon is evident.

EXPLORATION AND TRAVEL.

Wissmann's Expedition across Africa.

LIEUTENANT WISSMANN, whose journeys in the Kongo basin won him a well deserved fame as a traveller and energetic explorer, has just returned from his second expedition across the African continent. In the spring of 1886 he started from Angola for Luluaburg, a station of the Kongo Association which is situated in the empire of the Muata Yambo. Since Pogge's first journey in 1876, there have been six Muata Yambos, and, as at the death of the ruler the capital is changed, six capitals of the empire. We gave a report of Wissmann's expedition from Luluaburg to the Baluba country in No. 228 of *Science*. On his return from this excursion, he found one building of the station, which contained twenty-one rooms, burnt down, and the commander sick with malaria. His description of the station is of some interest. It consists of a number of houses for the officers of the station, barracks, a house for twelve women, stables, and a prison. The latter is called the cold house, as it is not permitted to have a fire in it during the

night, — a regulation which is much feared by the negroes, the nights being very cool on the high plateau. The station is protected by a stockade, and a *glacis* three hundred feet in width. The roads in the neighborhood of the station are fifteen feet wide, and kept very clean. About two thousand feet from the station a village of the Bassilange is situated.

Wissmann's expedition, when starting from Luluaburg in October, 1886, consisted of eighty-nine persons, among whom were an interpreter, a Zanzibari, and thirteen Angola men, while the rest were Bassilange. The number of people, however, rapidly increased to about one thousand, as the Lukugesha, the empress of the Muata Yambo Empire, and the son of Kalamba, with their followers, joined the expedition. When they arrived on the Lubi, an excursion into the country of the Benangongo, who live on the right bank of the river, was made. Then the river was followed to its confluence with the Sankuru, which was crossed below the mouth of the Lubi. It was originally Wissmann's intention to explore the country north-east of this river, which forms the watershed between the Sankuru and the Kongo. He found, however, the state of affairs in the country east of the Sankuru so much changed since the time when he visited it first, four years ago, that he was unable to carry out his purpose. While formerly the cowry was the principal object of barter, now guns and ammunition were in demand. The slave-trade is flourishing. The chiefs of the Bassonge and Bassenge, frequently supported by slave-traders, make raids upon the neighboring tribes in order to procure slaves. These are bartered to the traders for guns and ammunition, or for ivory to the Bakuba, who buy the women for their household, the men for being sacrificed at burials. A short time before Wissmann's arrival a chief of the Bakuba had died, and two hundred slaves were killed when he was buried. Travelling eastward, Wissmann crossed a vast belt of primeval forest which is inhabited by Batetela and the dwarfish Watwa. The woods are almost void of large animals, and even birds are scarce. On the Lukassi the expedition was attacked by the natives, who killed several persons with their poisoned arrows. But after a lively skirmish the natives were driven off, and, when the expedition reached their villages, they were found deserted. During the month of January, 1887, Wissmann crossed a territory depopulated by war and small-pox. The country of the industrious Beneki, whom he visited on his first journey, he found entirely devastated. Famine and small-pox prevailed among the members of the expedition, and it was not until the Lomami was crossed that matters became more favorable. At last Nyangwe was reached. Wissmann found the Arabs of this place in a state of great excitement on account of the events at Stanley Falls. Nevertheless he succeeded in returning the Bassilange to their native country, but Wissmann himself had to give up the hope of further explorations, and proceeded on the well-known route to the Tanganyika and by way of Lake Nyassa to Zanzibar, whence he returned to Europe.

The results of this expedition are not so important as it was hoped they would be when Wissmann started from Luluaburg. An expedition from the Kongo southward, or from Luluaburg north-eastward, is what is wanted to give us a more thorough knowledge of the hydrography of Central Africa.

THE HUDSON BAY EXPEDITION OF 1886. — Lieutenant Gordon's report of the last expedition of the 'Alert' to Hudson Bay makes it clear that all hopes of establishing a trading-route from England to the west coast of Hudson Bay must be abandoned. The navigation of Hudson Strait proved extremely dangerous on account of the prevailing fogs, the strong tides, and the narrowness of the waters, but principally on account of the heavy ice of Fox Basin, which frequently obstructs the western entrance of the Strait, and of the faulty working of the compass. Besides, vessels navigating these waters must be fortified for meeting the ice, and must not be larger than two thousand tons, because a larger ship would be somewhat unwieldy, could not make such good way through the loose ice, and, being unable to turn so sharply, she would get many a heavy blow, that a smaller ship would escape. Gordon supposes that navigation can be opened between the 1st and 10th of July, and that the closing of the season would be about the first week of October. These results of Lieutenant Gordon's experience agree exactly with what was maintained by all experts when the scheme was first propounded; but at that time their

¹ That this is instinctive is borne out by the fact that it occurs in those blind from birth, and in whom opening the eyes could not thus increase sensation.

views were disregarded in Canada. Although the principal object of the expedition has failed, its scientific results are considerable. These consist chiefly of the meteorological and hydrographical observations of two years, from the fall of 1884 to the fall of 1886, and other occasional remarks of the observers. The results of these observations are laid down in a meteorological atlas of Hudson Bay, but it seems to us that the available material is too scanty for constructing the monthly isothermal lines over so vast a territory. The report is accompanied by a plan of Churchill Harbor and York Roads (at the mouth of Nelson River), from the surveys of Lieutenant Gordon. The general track-chart is not very elaborate, and in many parts not up to date. Several changes in the coast-line appear, for which no evidence is given; e.g., the division of the main island of Southampton into two parts. The publication of several charts and plans based on surveys of the expedition is promised at the end of the report.

ETHNOLOGY.

The Eskimo Tribes.

DR. RINK, who has for a long time maintained the American origin of the Eskimo, has published the results of his long-continued observations and studies in the eleventh volume of the *Meddelser an Grönland*. Fortunately the volume, the publication of which has long been wished for by all students of Arctic America, is written in English, and thus made accessible to a wide circle of readers. Rink has propounded his views on the origin of the Eskimo in several papers, which were published in various journals. He believes that they descended from the interior of Alaska to the coast of the Arctic Ocean, and gradually spread eastward. His arguments, which form the first part of his book, are based on a comparison of the implements, dress and ornaments, domestic industry and arts, religion and folk-lore, and sociology of the Eskimo of the various parts of Arctic America. The results of this investigation are, that the hunting-implements are the more highly developed the farther we proceed eastward, that the style of dress and habitations show a gradual approach to the Greenland style from west to east, and that the western tribes occupy a higher stage of social organization than the eastern ones. Among the customs which prevail among the western tribes, but gradually disappear eastward, he mentions the use of the labret, and the religious festivals in which masks are used.

Conclusions drawn from these facts are necessarily open to discussion, as these phenomena may be explained in different ways. I think attention should be called to the fact that all the peculiarities of the western tribes may be derived from an influence of the North-west American culture. We have the extensive use of masks, the peculiar wooden hat of the southern Eskimo tribes, the use of the labret, the festivals in which property is given away, the houses built on the same plan as Indian houses, the sweat-bath, the existence of slavery, and the high development of the art of carving. The existence of so many similar or identical phenomena in two neighboring nations cannot be fortuitous. Besides, I have to mention that the folk-lore of the tribes of British Columbia refers to the Eskimo country and to the Eskimo as plainly as possible. The legends of tribes of Vancouver Island speak of a country in the far west, where the sea is always covered with ice, where the nights are very long, and where people live who use skin boats. Considering the great uniformity of Eskimo life all over Arctic America, I cannot but conclude that here an immediate influence of the North-west Americans upon the Eskimo had place, and that west of the Mackenzie we do not find the latter in their primitive state of culture. It is not impossible, that, in consequence of this influence, inventions and customs which were originally Eskimo (as the kayak) became more neglected than they are in other regions where foreign influences were not so strong.

But we have to consider several other points. The use of masks representing mythical beings, which is peculiar to North-west American tribes, is not entirely wanting in the east. The giving-away of property at certain festivals, and the use of the singing-house, with a central fire and places for the people all around the wall, may also be traced as far as Davis Strait. It may even be that the plan of the stone or snow house of the central Eskimo,

with elevated platforms on three sides of a central floor, must be traced back to a square house similar to that of the western tribes.

I will not enter into a discussion of the similarity between Eskimo and Indian folk-lore, as we are not sufficiently informed about this subject. The few traces which are common to both are so wide-spread that they cannot be considered proof of an early connection between these nations. The story of the dog who was the ancestor of certain tribes, the transformation of chips of wood into salmon, the idea that animals are men clothed in the skins of animals, stories of children who were deserted by their relatives and became rich and powerful by the help of spirits, are common to the folk-lore of North-west America and the Eskimo.

It seems that the only safe conclusions one can arrive at are the following. The Eskimo reached an ice-covered ocean as one body. At that time their religious ideas and implements were similar to what we observe at the present time. They knew the kayak and the sledge, they lived probably in large square houses, they had domesticated the dog, and it is not improbable that they had certain festivals which referred to the seasons or to the sun. Besides this, we are inclined to suppose that they were fishermen, and were accustomed to the use of boats before they came to the Arctic Sea. These conclusions seem to point out that the Eskimo spread from the great rivers of central Arctic America.

In order to make satisfactory progress in the puzzling problem of the origin of the Eskimo, the influence of the North-west Americans upon their Arctic neighbors, and the origin of the folk-lore of the Tinne and western Eskimo, must be studied. In our present state of knowledge, we can consider the American origin of the Eskimo only a theory, which is more probable than an immigration from Asia.

The principal part of Rink's book is an excellent treatise on the Eskimo grammar, and a comparative list of the independent stems of the Eskimo dialects. The stems are arranged in alphabetic order, and to each is added the dialect in which it occurs. As the Greenland dialect is by far the best known, it is made the basis of the list, and all other dialects are referred to it. A discussion on the modes of spelling applied by different writers and the probable differences of dialects precedes the linguistic part. We believe that the material for studying the phonetic laws of the Eskimo language is large enough to allow a more thorough investigation, and we consider the latter very desirable. Among the contents of the collection of stems, we have to call particular attention to the Greenland words occurring in traditions and in the sacred language of the priests. These words, as well as those which I collected among the central Eskimos, tend to show that many of the Alaskan stems which are lost in the common language still exist in the sacred language, and thus the most distant branches of the Eskimo stock are linked closer together. Besides, Rink has shown that a number of words that were considered exclusively western occur in certain derivations among the eastern tribes. Among these I mention the word *suk* ('man') of Alaska, which is found as *surosek* in the east. All recent researches tend to show that foreign influences upon the language are very slight, and the difference of dialect is probably entirely due to evolution.

The work of Dr. Rink will be highly appreciated by all ethnologists, and we have only to add the wish that the learned author will publish the originals of his large collection of Eskimo traditions, which would be highly welcome to students of American philology.

F. BOAS.

BOOK-REVIEWS.

The Children of Silence; or, The Story of the Deaf. By JOSEPH A. SEISS. Philadelphia, Porter & Coates. 8°.

THE object of this book is to excite interest in behalf of the deaf and dumb; and the means by which the author aims to do this is by presenting statistics of the numbers thus afflicted, the sad condition in which the deprivation leaves them, and an account of what has been done for their relief. Judged by the lenient standards which one must apply when considering it as a benevolent enterprise, the work is quite successfully done, and throughout urges the reader to a deeper knowledge of the subject than is here available. Regarded as a contribution to educational science, a less favorable